
Response to an Epidemic of Yellow Fever

CDC
Centers for Disease
Control and
Prevention

Steps in the Detection & Confirmation of Epidemic Yellow Fever

- **Health worker suspects YF**
- **Health facilities report suspected case(s) immediately**
- **District level conducts field investigation**
- **District level arranges for laboratory confirmation**

Response Steps When Yellow Fever is Confirmed

- 1. Convene epidemic committee**
- 2. Inform the public**
- 3. Conduct mass vaccination**
- 4. Control mosquitoes**
- 5. Treat patients**
- 6. Collect & report data / document epidemic**
- 7. Evaluate response - Plan for improvements**

Responsibilities Central Level-1

- **Plan and Formulate Policy**
- **Notify WHO of suspected epidemic and of laboratory confirmation**
- **Convene National Epidemic Committee**
- **Collect and Analyze Data - Provide Feedback to lower levels**

Responsibilities Central Level-2

- **Provide advice and assistance - assist in Field Investigations**
- **Acquire Supplies and Vaccine**
- **Conduct Epidemiological Studies**
- **Provide for funding**

District Level Responsibilities

Surveillance and Detection

- **Surveillance for YF cases and epidemics**
- **Conduct field investigation**
 - **Send team to field**
 - **Collect and analyze data**
 - **Report on investigation**
- **Arrange for laboratory confirmation**

District Level Responsibilities

Response

- **Convene epidemic committee**
- **Inform and educate the public**
- **Treat patients**
 - **support health facilities**
 - **train health workers**
 - **arrange for Temporary Treatment Centers**
 - **inventory / order supplies**

District Level Responsibilities

Response - Vaccination

- **Rapid Mass Vaccination**
 - **Define target population**
 - **Calculate # doses needed**
 - **Request vaccine and supplies**
 - **Organize teams & cold chain**
 - **Conduct vaccinations**

District Level Responsibilities

Response - Mosquito Control

- **Mosquito Control**
 - **Get advice of vector expert**
 - **Eliminate adult mosquitoes**
 - **Eliminate breeding sites**
 - **Recommend bed-nets**
 - **Educate public**

District Level Responsibilities

- **Monitor epidemic & control measures**
 - **Monitor:**
 - **number of cases & deaths**
 - **CFR and attack rates**
 - **geographic location**
 - **Monitor inventory of supplies**
 - **Monitor progress of vaccination**
 - **Determine need for assistance**

Responsibilities Health Facility Level

- **Recognize cases of suspected YF**
- **Report suspected cases immediately**
- **Collect information on patients**
- **Report daily during epidemics**
- **Treat patients**
- **Inventory treatment supplies**
- **Educate the public**

Epidemic Committee

- ▶ **Committees are needed at district, provincial & national levels**
 - fewer members needed at district level than at national level
- ▶ **Committees need decision making powers**
- ▶ **A separate YF committee not needed**
 - but a general epidemic committee should maintain competence in YF

Duties of Epidemic Committee - 1

- **Plan preparedness and control strategies**
- **Identify financing and resources needed for preparedness and control activities**
- **Define population at risk of yellow fever**
- **Identify competent laboratory support**

Duties of Epidemic Committee - 2

- **Assign specific responsibilities for detection and response**
- **Establish procedures for mobilizing vaccination campaigns rapidly**
- **Identify resources needed for rapid epidemic response**
- **Estimate / stockpile supplies needed**

Duties of Epidemic Committee - 3

- **Coordinate and monitor implementation of control measures**
- **Coordinate education of health care community and the public**
- **Evaluate impact of control measures, adjust strategy, review performance**
- **Report on the epidemic**

Members of Epidemic Committee -1

- **Ministry of Health**
 - *Administration*
 - *Communicable Diseases*
 - *Expanded Program on Immunization*
 - *Drug Supply and Distribution*
- **Other Ministries, as appropriate**
- **Armed Forces, Police, Border Officials**
- **NGOs involved in Health Care**

Members of Epidemic Committee - 2

- **Reference Laboratory**
- **Referral hospitals & hospitals in affected area**
- **Technical Experts**
 - *entomologists*
 - *vector control experts*

Response - What to Report

- **Number of cases and deaths**
- **Location of cases**
- **Dates of onset of disease**
- **Clinical details**
- **Action taken**

Response - Reporting During an Epidemic

Report:

- **The time period for the report**
 - the epidemiological week or the dates
- **The number of facilities reporting**
 - include those that reported no cases
- **Total # of health facilities in the district**
- **Number & location of cases and deaths**
 - report suspected as well as confirmed
- **Number of vaccinations given and planned**

Response - Zero Reporting

- **"Zero reporting" = send a report even if no cases or deaths occurred**
- **Distinguishes between areas**
 - that really had no cases
 - that did not send a report
 - from which the report did not arrive
- **Helps evaluate effectiveness of vaccination campaign**

Response - Vaccination Plan Strategy

- **Ideal = vaccinate all susceptibles**
- **If resources are limited = focus on areas and groups at highest risk**
- **Use age- and sex-specific attack rates to determine *groups* at highest risk**
- **Use investigation results to determine *areas* at highest risk**

17D Yellow Fever Vaccine

- One dose protects adults for life and children under four years for 10 years
- Do not vaccinate infants under 9 months
- *During epidemics*, vaccinate ages 12 months and older
- *During epidemics*, vaccinate pregnant women

Calculate Number of Vaccine Doses Needed

1. **Determine population most at risk using age-specific attack rates**
2. **Multiply number at risk by 1.17**
(this is the wastage factor)
3. **Multiply result by 1.25**
(number of reserve doses is 25%)
4. **Result = number of doses to order**

Vaccination Team

All members must be vaccinated

- 1 supervisor**
- 2 vaccinators**
- 2 clerks**
- 1 cold chain technician**
- 1 driver**
- community representatives / translators**
- or smaller 4 person team that rotates duties**

Vaccine Storage and Handling

- **17D vaccine should be frozen on arrival**
 - if not, discard it
- **Store frozen vaccine at 0 degrees, or lower**
- **Keep frozen until reconstituting for use**
- **Reconstituted vaccine**
 - keep it cold
 - keep it out of the sun
 - use it within 2 hours

Document Vaccination Campaign

- **Record dose and date on a vaccine card**
- **Use EPI, Tetanus Toxoid or special YF card**
- **Tally doses given, by age group**
- **Report numbers and ages vaccinated daily**

Reduce Mosquito Populations

- **Protect household water**
 - remove larvae
 - cover all water containers
- **Search for & eliminate water "containers" (tires, bottles, gourds, rubbish)**
- **Spray the inside of houses**

Prevent Spread of Yellow Fever in Health Facilities

- **Use bed nets with all suspected YF patients**
- **Protect all water containers from mosquitoes**
- **Eliminate all mosquito breeding places nearby**
- **Eliminate adult mosquitoes**
- **Vaccinate all staff**




Informing the Public

Everyone Should Know

- **Symptoms of yellow fever**
- **Where to go for treatment**
- **Where & when to go for vaccination**
- **How to reduce mosquito population**

Mosquitoes Spread Yellow Fever

Follow These Rules to Protect Yourself

-  **Get vaccinated against yellow fever**
-  **Rid your home of mosquitoes**
-  **Use mosquito bed nets**

Get Vaccinated Against Yellow Fever

- **Vaccination prevents yellow fever**
- **Go to _____ for vaccination.**
- **Vaccination will be offered on _____
from _____ o'clock to _____ o'clock.**
- **Bring your vaccine cards (EPI or TT)**

Store Drinking Water Safely

For Prevention of YF and Diarrhea

- **Store water in a clean container**
 - with a lid
 - with a small opening
- **Use water within 24 hours**
- **Clean the container every day**
- **Pour water *from* the container -
do not dip into it**